

### **Amendments to the Specification**

**Page 3, please replace the paragraph spanning lines 19-25 with the following rewritten paragraph:**

According to this invention, there is provided a method of surface treatment of titanium metal wherein plasma carburizing is carried out in an atmosphere comprising a carburizing gas having the ~~molar~~ atomic weight ratio of hydrogen atoms (H) to carbon atoms (C) adjusted to  $1 \leq H/C \leq 9$  at a pressure of 13-400 Pa and a temperature of 400-690 °C.

**Page 5, please replace the paragraph spanning lines 5-15 with the following rewritten paragraph:**

Also, in order to reliably solve the same object, a method of surface treatment of a titanium metal is preferable which comprises the steps of heating the titanium metal to a temperature of 400-690 °C in a cleaning gas atmosphere containing hydrogen gas, subjecting the surface of the titanium metal to cleaning by applying a DC voltage of 200-1500 V, and plasma carburizing in an atmosphere comprising a carburizing gas having the ~~molar~~ atomic weight ratio of hydrogen atoms (H) to carbon atoms (C) adjusted to  $1 \leq H/C \leq 9$  at a pressure of 13-400 Pa and a temperature of 400-690 °C.

**Page 8, please replace the paragraph spanning lines 6-15 with the following rewritten paragraph:**

The ~~molar~~ atomic weight ratio of hydrogen atoms (H) to carbon atoms (C) in the carburizing gas among the above plasma carburizing conditions should be  $1 \leq H/C \leq 9$ . If the (H/C) ratio is less than 1, carburization will not proceed smoothly, so that high-hardness state will not be attained by carburizing from the titanium metal surface to the depth of 50 µm, but the carbon becomes amorphous and deposits on the titanium metal surface. Also if H/C exceeds 9, the amount of carbon ions is insufficient, so that it takes a long time for carburization, which is not economical.

**Page 9, please replace the paragraph spanning lines 14-24 with the following rewritten paragraph:**

Next, a carburizing gas comprising a hydrocarbon gas, hydrogen gas, etc. and having the molar-atomic weight ratio (H/C) of hydrogen atoms (H) to carbon atoms (C) adjusted to  $1 \leq H/C \leq 9$  is introduced into the furnace so that the pressure will be within the range of 13-400 Pa. A high DC voltage of 400-600 V is applied at a current density of  $0.1 \text{ A/m}^2$ - $5 \text{ A/m}^2$  for plasma carburizing. In the plasma gas, ionized activated carbon C+ will be produced, which adheres to the metal surface and further diffuses into the interior, or by the action of sputtering or implantation, carburizing reaction proceeds.